

Amendments to the Specification:

Please replace the paragraph beginning at page 1, line 9, with the following redlined paragraph:

Figure 1 shows a construction of a conventional RAKE receiver. As shown, ~~it is assumed that signals received from various paths and by antennas are entered through independent paths and are then processed fingers, independently~~ assuming that signals received from various paths and antennas are entered through independent paths, each finger controls each of the signals.

Please replace the paragraph beginning at page 2, line 14, with the following redlined paragraph:

In order to accomplish the above object, in a finger using a time division method according to the present invention and a RAKE receiver using the finger, the finger comprises an antenna signal combiner for combining signals, received by a plurality of ~~antenna-antennas~~ and having the almost same time delays, with an adequate delay to produce multiplexed signals; a tracking apparatus for receiving the multiplexed signals to estimate time delay information on the multiplexed signals; a de-spreading apparatus for de-spreading the multiplexed signals with the estimated time delay information, each of which are received from the antenna signal combiner and the tracking apparatus, respectively; and a demodulating apparatus of demodulating the de-spread signals received from the de-spreading apparatus, to estimate original signals received by the plurality of antennas.

Please replace the paragraph beginning at page 2, line 24, with the following redlined paragraph:

Also, a finger according to the present invention comprises an antenna signal combiner for combining signals, received by a plurality of ~~antenna-antennas~~ and having the almost same time delays, with an adequate delay to produce multiplexed signals; a tracking apparatus for receiving the multiplexed signals to estimate time delay information on the multiplexed signals; a de-spreading apparatus for de-spreading the multiplexed signals with the

estimated time delay information, each of which are received from the antenna signal combiner and the tracking apparatus, respectively; and a non-coherent demodulating apparatus of demodulating only the de-spread signals from the de-spread apparatus to estimate original signals received by the plurality of antennas.

Please replace the paragraph beginning at page 3, line 20, with the following redlined paragraph:

According to one aspect of the present invention, a method of estimating signals of a finger comprises a first step of combining signals, received by a plurality of ~~antenna~~ antennas and having the almost same time delays, with an adequate delay to produce multiplexed signals; a second step of estimating a common time delay information on the multiplexed signals; a third step of de-spreading the multiplexed signals using the estimated time delay information to produce de-spread signals; a fourth step of estimating channel information on the de-spread signals; and a fifth step of demodulating the de-spread signals on signals of each of the antennas basis using the estimated channel information to estimate signals received by the plurality of antennas.

Please replace the paragraph beginning at page 4, line 15, with the following

Figure 2 is an overall structure of a RAKE receiver according to one embodiment of the present invention. It should be noted that the present invention employs a principle that the time delays of signals received via a plurality of antennas are the same if the distance between the antennas is not ~~se~~-greater, compared to the wavelength of carrier waves, because the bandwidths of the signals received by the antennas are ~~very~~-much smaller than the carrier wave.

Please replace the paragraph beginning at page 5, line 3, with the following

The operation of the RAKE receiver having this structure will ~~be~~-now be explained in detail. First, the RF analog signals received by the M' number of antennas 200 are converted into baseband digital signals at the RF analog to baseband digital converter 210. The converted signals are then inputted to the signal searcher 220 and the signal controller 230. The

signal searcher 220 searches the intensity of the received signals and then informs the result to the signal controller 230 and fingers 240, respectively. Meanwhile, the signal controller 230 sends every M ($\leq M'$) number of the signals received from the RF analog baseband digital converter 210 to every one of the fingers ~~140~~ 240, according to information from the signal searcher 220. The fingers 240 estimate ~~the an original signals on signal of~~ each of the M number of the signals received via individual paths and ~~send then forward~~ the results to the combiner 250. The combiner 250 combines the original signals estimated at respective fingers 240 to estimate original signals received by the plurality of antennas 200. Also, the fingers 240 may send respective original signals for the M number of the estimated signals to the combiner after combining them.

Please replace the paragraph beginning at page 6, line 1, with the following

The operation of the finger 300 having this structure will ~~be now~~ be explained in detail. The tracking apparatus 320 receives the signals having ~~the almost~~ the same time delays received by the plurality of antennas through the signal controller 310 within the RAKE receiver. The received signals are processed through three steps. First, the tracking apparatus 320 detects any of the received signals having the time delay falling under a predetermined range error and then sending it to the de-spreading apparatus 330. Then, the de-spreading apparatus 330 uses the received information on the time delay to revert the spread signals into before-spreading signals. Here, if the de-spreading apparatus 330 does not know a spreading factor of the spread signal, it de-spreads the spread signal using a minimum spreading factor and then sends the de-spread signal to the demodulating apparatus 340. (After a spreading factor is obtained, the de-spread signals by the minimum spreading factor ~~is are~~ are then combined by the amount corresponding to the spreading factor, thus completing a de-spreading procedure.) Finally, the demodulating apparatus 340 detects the signals and then ~~send~~ sends the detected signal to the combiner 360.

Please replace the paragraph beginning at page 6, line 19, with the following

The finger 400 includes a tracking apparatus 420 ~~consisted~~ consisting of a time delay information estimator 421, a demultiplexer 422, a storage means 423 and a combiner 424;

a de-spreading apparatus 430 consisted of a de-spreading information extractor 431, a demultiplexer 432 and a storage means 433; a channel estimating apparatus 460 consisted of a channel state estimator 461, a demultiplexer 462 and a storage means 463; a demodulating apparatus 450 ~~consisted~~ consisting of a transmitting signal estimator 451 and a combiner 452; and a combining apparatus 470. The finger 400 further includes an antenna signal combiner 410 for combining received signals with an adequate delay and a multiplexer 440 for extending the distance between the received signals.

Please replace the paragraph beginning at page 6, line 28, with the following

The operation of the finger 400 having this structure will be now explained. First, selected $N_1 (\leq M)$ signals S_1, \dots, S_{N_1} among the signals from the signal controller 401 are inputted to the antenna signal combiner 410 within the finger 400. Then, the ~~antenna~~ antenna signal combiner 410 adequately delays and combines the received N_1 number of signals so that a single apparatus can easily process a plurality of signals received from various antennas.

Please replace the paragraph beginning at page 7, line 5, with the following

At this time, if the sampling rate of the signals received by the respective antennas is $f_c = 1/T_c$, a combining method is employed by which ~~a-an~~ N_1 number of antennas are selected according to a pre-determined basis, signals received by a k -th ($k = 1 \dots N_1$) antenna are combined with a $(k-1) T_c/N_1$ delay and the signals having the sampling rate $f'_c = N_1/T_c$ are produced.

Please replace the paragraph beginning at page 9, line 5, with the following

In case that a non-coherent demodulating apparatus is employed, the demodulating apparatus divides the time period of T_c being a given time period into the N_1 number of periods without any output signal from the channel estimating apparatus and the transmitting signal estimator ~~the~~ performs a non-coherent demodulating process on a signal basis of respective antennas.